

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum  
Internationales Büro



(43) Internationales Veröffentlichungsdatum  
24. Dezember 2003 (24.12.2003)

PCT

(10) Internationale Veröffentlichungsnummer  
WO 03/106558 A1

(51) Internationale Patentklassifikation: C08L 61/32, C08J 5/24, C08G 73/06

(71) Anmelder (für alle Bestimmungsstaaten mit Ausnahme von US): AGROLINZ MELAMIN GMBH [AT/AT]; St.-Peter-Strasse 25, A-4021 Linz (AT).

(21) Internationales Aktenzeichen: PCT/EP03/06173

(22) Internationales Anmeldedatum: 12. Juni 2003 (12.06.2003)

(72) Erfinder; und

(75) Erfinder/Anmelder (nur für US): RÄTZSCH, Manfred [DE/AT]; Langbauernweg 4, A-4073 Wilhering/Thalheim (AT). MACHHERNDL, Markus [AT/AT]; Liebermanweg 16/46, A-4060 Leonding (AT). BREITENEDER, Peter [AT/AT]; Mengerstrasse 13/II/6, A-4040 Linz (AT). PFEIFFER, Steffen [DE/AT]; Beuttlerweg 55, A-4030 Linz (AT). BUCKA, Hartmut [DE/AT]; Nr. 125, A-4622 Eggendorf (AT). KALTENBACHER, Sascha [AT/AT]; Wienerstrasse 370, A-4030 Linz (AT). DICKE, René

(25) Einreichungssprache: Deutsch

(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:  
A902/2002 14. Juni 2002 (14.06.2002) AT  
A905/2002 14. Juni 2002 (14.06.2002) AT

[Fortsetzung auf der nächsten Seite]

(54) Title: AMINOPLAST MOLDING COMPOUNDS FOR PRODUCTS EXHIBITING AN IMPROVED FLEXIBILITY AND AMINOPLAST PRODUCTS EXHIBITING AN IMPROVED FLEXIBILITY

(54) Bezeichnung: AMINOPLAST-FORMMASSEN FÜR ERZEUGNISSE VERBESSERTER FLEXIBILITÄT UND AMINOPLASTERZEUGNISSE VERBESSERTER FLEXIBILITÄT

(57) Abstract: The invention relates to aminoplast molding compounds that are comprised of mixtures consisting of meltable 20 to 1000-ring polytriazine ethers, in which the triazine rings are primarily linked by binding links of the -NH-CHR<sub>2</sub>-O-R<sub>4</sub>-O-CHR<sub>2</sub>-NH- and -NH-CHR<sub>2</sub>-NH- type, whereby: R<sub>2</sub> = H, C<sub>1</sub>-C<sub>7</sub> alkyl; R<sub>4</sub> = C<sub>2</sub>-C<sub>18</sub> alkylene, -CH(CH<sub>3</sub>)-CH<sub>2</sub>-O-<SB>C<sub>2</sub>-C<sub>12</sub>-</SB>-alkylene-O-CH<sub>2</sub>-CH(CH<sub>3</sub>)-, -CH(CH<sub>3</sub>)-CH<sub>2</sub>-O-<SB>C<sub>2</sub>-C<sub>12</sub>-</SB>-arylene-O-CH<sub>2</sub>-CH(CH<sub>3</sub>)-, -[CH<sub>2</sub>-CH(CH<sub>3</sub>)-O-CH<sub>2</sub>-CH(CH<sub>3</sub>)]<sub>n</sub>-, -[CH<sub>2</sub>-CH(CH<sub>3</sub>)-O-CH<sub>2</sub>-CH(CH<sub>3</sub>)]<sub>n</sub>-, -[O-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>]-<sub>n</sub>-, -[(CH<sub>2</sub>)<sub>2-8</sub>-O-CO-<SB>C<sub>6</sub>-C<sub>14</sub>-</SB>-arylene-CO-O-(CH<sub>2</sub>)<sub>2-8</sub>]-<sub>n</sub>-, in which n = 1 to 200. The aminoplast molding compounds are also comprised of sequences containing siloxane groups, sequences based on the alkylene oxide adducts of melamine, phenol ether sequences based on bivalent phenols and diols, and these compounds can contain up to 50 % by mass of additional reactive polymers of the ethylene-copolymer, maleic anhydride-copolymer, modified maleic anhydride-copolymer, poly(meth)acrylate, polyamide, polyester and/or polyurethane type, up to 75 % by mass of fillers, up to 20 % by mass of diols, and up to 5 % by mass of stabilizers, UV absorbers and/or auxiliary agents. The invention also relates to aminoplast products that exhibit an improved flexibility such as panels, pipes, profiled pieces, coatings, foam materials, fibers or injection-molded parts, which can be produced by thermoplastic processing the inventive molding compounds. The aminoplast molding compounds can be processed according to conventional melt processing methods and can be used as hot-melt adhesives and for producing panels, pipes, profiled pieces, injection-molded parts, fibers and foam materials. The aminoplast products, which exhibit an improved flexibility while meeting high requirements with regard to flame resistance and heat resistance, are used in the construction industry, mechanical engineering, automotive industry and fire-protection engineering.

(57) Zusammenfassung: Aminoplast-Formmassen bestehend aus Mischungen aus schmelzbaren 20- bis 1000-Kern-Polytriazine-thern, in denen die Triazinringe überwiegend durch Brückenglieder vom Typ -NH-CHR<sub>2</sub>-O-R<sub>4</sub>-O-CHR<sub>2</sub>-NH- und -NH-CHR<sub>2</sub>-NH- verknüpft sind, wobei R<sub>2</sub> = H, C<sub>1</sub>-C<sub>7</sub> - Alkyl; R<sub>4</sub> = C<sub>2</sub>-C<sub>8</sub>-Alkyl, -CH(CH<sub>3</sub>)-CH<sub>2</sub>-O-C<sub>2</sub>-C<sub>12</sub>-Alkyl, -CH(CH<sub>3</sub>)-CH<sub>2</sub>-O-C<sub>2</sub>-C<sub>12</sub>-Arylen-O-CH<sub>2</sub>-CH(CH<sub>3</sub>)-, -CH(CH<sub>3</sub>)-CH<sub>2</sub>-O-C<sub>2</sub>-C<sub>12</sub>-Arylen-O-CH<sub>2</sub>-CH(CH<sub>3</sub>)-, -[CH<sub>2</sub>-CH(CH<sub>3</sub>)-O-CH<sub>2</sub>-CH(CH<sub>3</sub>)]<sub>n</sub>-, -[CH<sub>2</sub>-CH(CH<sub>3</sub>)-O-CH<sub>2</sub>-CH(CH<sub>3</sub>)]<sub>n</sub>-, -[O-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>]-<sub>n</sub>-, -[(CH<sub>2</sub>)<sub>2-8</sub>-O-CO-C<sub>6</sub>-C<sub>14</sub>-Arylen-CO-O-(CH<sub>2</sub>)<sub>2-8</sub>]-<sub>n</sub>-, -[(CH<sub>2</sub>)<sub>2-8</sub>-O-CO-C<sub>2</sub>-C<sub>12</sub>-Alkyl-CO-O-(CH<sub>2</sub>)<sub>2-8</sub>]-<sub>n</sub>-, wobei n = 1 bis 200; Siloxangruppen enthaltende Sequenzen, Sequenzen auf Basis von Alkylendioxyaddukten des Melamins, Phenolethersequenzen auf Basis zweiwertiger Phenole und Diolen, bedeuten, und wobei die Formmassen bis zu 50 Masse% weitere reaktive Polymere vom Typ Ethylen-Copolymere, Maleinsäureanhydrid-Copolymere, modifizierte Maleinsäureanhydrid-Copolymere, Poly(meth)acrylate, Polyamide, Polyester und/oder Polyurethane, bis zu 75 Masse% Füllstoffe, bis zu 20 Masse% Diole sowie bis zu 5 Masse% Stabilisatoren, UV-Absorber und/oder Hilfsstoffe, enthalten können; sowie Aminoplasterzeugnisse verbesserter Flexibilität wie Platten, Rohre, Profile, Beschichtungen, Schaumstoffe, Fasern oder Spritzgussteile, die durch thermoplastische Verarbeitung der erfindungsgemäßen Formmassen hergestellt werden. Die Aminoplast-Formmassen lassen sich nach üblichen Verfahren der Schmelzverarbeitung verarbeiten und können als Schmelzkleber und zur Herstellung von Platten, Rohren, Profilen,

[Fortsetzung auf der nächsten Seite]

WO 03/106558 A1



[DE/AT]; Auwiesenstrasse 62/7, A-4030 Linz (AT).  
MUJKANOVIC, Alisa [BA/AT]; Kaplanhofstrasse 36,  
A-4020 Linz (AT).

(74) **Anwalt:** GROSS, Felix; c/o Patentanwälte, Maikowski &  
Ninnemann, Postfach 15 09 20, 10671 Berlin (DE).

(81) **Bestimmungsstaaten (national):** AE, AG, AL, AM, AT,  
AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR,  
CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE,  
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO,  
RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,  
UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) **Bestimmungsstaaten (regional):** ARIPO-Patent (GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
eurasisches Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ,  
TM), europäisches Patent (AT, BE, BG, CH, CY, CZ, DE,  
DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL,  
PT, RO, SE, SI, SK, TR), OAPI-Patent (BF, BJ, CF, CG,  
CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Veröffentlicht:**

— mit internationalem Recherchenbericht

Zur Erklärung der Zweibuchstaben-Codes und der anderen Ab-  
kürzungen wird auf die Erklärungen ("Guidance Notes on Co-  
des and Abbreviations") am Anfang jeder regulären Ausgabe der  
PCT-Gazette verwiesen.

**BEST AVAILABLE COPY**

Spritzgussteilen, Fasern und Schaumstoffen eingesetzt werden. Die Aminoplastergezeugnisse verbesserter Flexibilität werden bei hohen Anforderungen an Flammfestigkeit und Wärmebeständigkeit im Bauwesen, Maschinenbau, Fahrzeugindustrie und Brandschutztechnik eingesetzt.

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/06173

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C08L61/32 C08J5/24 C08G73/06

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08L C08G C08J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 062 179 A (CASSELLA FARBWERKE MAINKUR AG) 13 October 1982 (1982-10-13) page 1, paragraph 1 page 1, last paragraph -page 3, paragraph 1 page 5, paragraph 2 -page 10, paragraph 2; claims; examples	1-21
X	GB 851 295 A (BRITISH INDUSTRIAL PLASTICS) 12 October 1960 (1960-10-12) page 1, line 18 -page 2, line 65 page 2, line 119-123 page 5, line 15 -page 6, line 25; claims; examples	1-21
	----- -/-	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

23 September 2003

Date of mailing of the international search report

01/10/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Otegui Rebollo, J

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/06173

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 526 804 A (CHEMIE LINZ GMBH) 10 February 1993 (1993-02-10) page 2, line 1-6 page 2, line 18 -page 3, line 50; claims; examples	1-15, 21
X	EP 0 068 162 A (CASSELLA FARBWERKE MAINKUR AG) 5 January 1983 (1983-01-05) <del>page 1, line 4-10</del> page 7, line 18 -page 9, line 21 page 10, line 6 -page 20, line 19; claims; examples	1-15, 21
X	EP 0 342 386 A (BASF AG) 23 November 1989 (1989-11-23) page 2, line 1-3 page 2, line 23 -page 3, line 53; claims; examples 1, 2	1-15, 21
X, P	EP 1 279 686 A (AGROLINZ MELAMIN GMBH) 29 January 2003 (2003-01-29) page 2, paragraph 4 -page 10, paragraph 53; claims; examples 3, 4 page 2	1-21
X, P	WO 03 046053 A (AGROLINZ MELAMIN GMBH ;BUCKA HARTMUT (AT); BURGER MARTIN (AT); DIC) 5 June 2003 (2003-06-05) page 2, paragraph 3 -page 4, paragraph 4 page 5, last paragraph page 20, paragraph 3 -page 24, last paragraph; claims 29, 30; examples 4-9, 11	1-21

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/06173

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0062179	A	13-10-1982	DE 3111936 A1 EP 0062179 A1 ES 8305803 A1 JP 57171748 A US 4430380 A ZA 8202057 A	07-10-1982 13-10-1982 16-07-1983 22-10-1982 07-02-1984 23-02-1983
GB 851295	A	12-10-1960	NONE	
EP 0526804	A	10-02-1993	AT 398768 B AT 154791 A AT 116664 T DE 59201134 D1 DK 526804 T3 EP 0526804 A1 ES 2066529 T3 JP 3282634 B2 JP 7003052 A US 5206066 A	25-01-1995 15-06-1994 15-01-1995 16-02-1995 13-03-1995 10-02-1993 01-03-1995 20-05-2002 06-01-1995 27-04-1993
EP 0068162	A	05-01-1983	DE 3125615 A1 AT 22910 T DE 3273794 D1 EP 0068162 A2 ES 8307851 A1 PT 75146 A ,B US 4535031 A ZA 8203767 A	13-01-1983 15-11-1986 20-11-1986 05-01-1983 01-11-1983 01-07-1982 13-08-1985 30-03-1983
EP 0342386	A	23-11-1989	DE 3814292 A1 AT 103618 T DE 58907322 D1 EP 0342386 A1 ES 2061767 T3 NO 891708 A ,B,	09-11-1989 15-04-1994 05-05-1994 23-11-1989 16-12-1994 30-10-1989
EP 1279686	A	29-01-2003	DE 10136321 C1 EP 1279686 A2 US 2003045667 A1	12-12-2002 29-01-2003 06-03-2003
WO 03046053	A	05-06-2003	AT 18122001 A WO 03046053 A1 AT 18132001 A	15-09-2003 05-06-2003 15-09-2003